

Rec'd PCT/A 19 AUG 2005

10/532280

PCT/EP2003/011828



PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference D80273PC	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/011828	International filing date (day/month/year) 24 October 2003 (24.10.2003)	Priority date (day/month/year) 25 October 2002 (25.10.2002)
International Patent Classification (IPC) or national classification and IPC C08J 7/12		
Applicant STOCKHAUSEN GMBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 29 April 2004 (29.04.2004)	Date of completion of this report 16 July 2004 (16.07.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

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I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages _____ 1-56 _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the claims:
 pages _____ 1-28 _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the drawings:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement			
Novelty (N)	Claims	3-10, 13, 14, 22, 24	YES
	Claims	1, 2, 11, 12, 15-21, 23, 25-28	NO
Inventive step (IS)	Claims		YES
	Claims	1-28	NO
Industrial applicability (IA)	Claims	1-28	YES
	Claims		NO

2. Citations and explanations

Citations

D1: DE 35 03 458 A (ARAKAWA CHEM IND) 8 August 1985
(1985-08-08) (mentioned in the application)

D2: US-A-5 140 076 (HATSUDA TAKUMI ET AL)
18 August 1992 (1992-08-18) (mentioned in the
application)

D3: EP-A-1 211 266 (BAYER AG)
5 June 2002 (2002-06-05)

D4: WO 01/13841 A (STOCKHAUSEN CHEM FAB GMBH; BREHM
HELMUT (DE); HARREN JOERG (DE); I) 1 March 2001
(2001-03-01)

Novelty (PCT Article 33(2))

D1, example 1, describes a process containing the
following steps:

- (i) treatment of cross-linked polyacrylic acid
in powder form with silicon dioxide,
corresponding to the claimed inorganic substance,
and an aqueous ethylene glycol diglycidyl ether
solution, corresponding to the claimed cross-
linking agent, and
- (ii) heating the composition so obtained to 120°C

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to produce further cross-linking of the polymer.

The product so obtained is used, for example, to produce diapers (page 3, line 18).

In step (i) the addition of ethylene glycol diglycidyl ether solution gives an aqueous solution of silicon dioxide and ethylene glycol diglycidyl ether. Thus, in this step polyacrylic acid powder is brought into contact with an aqueous solution of silicon dioxide and ethylene glycol diglycidyl ether. Consequently, this process step corresponds to the first step in the claimed process. In step (ii) the product so obtained is heated, which corresponds to the second step of the claimed process. Therefore, the process described in D1, like the claimed process, necessarily results in denser cross-linking of the external areas of the polyacrylic acid particles. Consequently, at least the subject matter of all the independent claims 1, 2, 11, 12, 15-21, 23 and 25-28 is not novel over D1.

D2 (column 1, lines 7-13, column 8, lines 62-67, column 9, lines 10-30, and example 4) discloses a process containing the steps:

- (i) contacting an absorbent resin powder with an aqueous solution of a cross-linking agent and an inorganic powder (E), and
- (ii) heating the product obtained so that the surface of the resin particles is subjected to secondary cross-linking.

Consequently, at least the subject matter of all the independent claims 1, 2, 11, 12, 15-21, 23 and 25-28

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is not novel over D2.

D3 (example 1 and page 3, lines 44-48) discloses a process for the surface cross-linking of polyacrylic particles containing the steps:

- (i) contacting a hydrolysed polyacrylonitrile powder with a composition containing (a) water, (b) orthosilicic acid, corresponding to the claimed inorganic component, and (c) formaldehyde, corresponding to the claimed cross-linking agent, and
- (ii) heating the composition so prepared to 98°C.

The product obtained is used to produce diapers (page 3, line 53).

Consequently, at least the subject matter of all the independent claims 1, 2, 11, 12, 15-21, 23 and 25-28 is not novel over D3.

D4 (example 4 and page 21, lines 25-28) discloses a process for preparing secondary cross-linked polyacrylates containing the steps:

- (i) addition of Flavith S 108, a silica-alumina suspension, to polyacrylate particles (back reference to example 2),
- (ii) admixture of an aqueous solution of ethylene carbonate, corresponding to the claimed cross-linking agent, and
- (iii) heating to 170°C.

Addition of the ethylene carbonate solution yields an aqueous solution containing ethylene carbonate

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and silica-alumina particles, which are in contact with the polyacrylate particles. Thus, steps (i) and (ii) correspond to the first step of the claimed process. Consequently, at least the subject matter of all the independent claims 1, 2, 11, 12, 15-21, 23 and 25-28 is not novel over D4.

Inventive step (PCT Article 33(3))

It is not clear what problem is solved in a surprising manner in relation to the prior art by the dependent claims. Consequently, the subject matter of all the dependent claims 3-10, 13, 14, 22 and 24 at least lacks inventive step over the cited documents.